

Appl. No. 10/526,126
Reply to Office Action of November 15, 2006

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): An organic thin-film transistor comprising a support and provided thereon, a gate electrode, an insulation layer, a source electrode, a drain electrode, and an organic semiconductor layer, the support comprising at least one of resins, and the organic semiconductor layer containing at least one of organic semiconducting materials, wherein a phase transition temperature of said at least one of the organic semiconducting materials is not more than a glass transition point of said one of the resins, and wherein the organic thin-film transistor is manufactured by a process comprising the step in which heat treating is carried out at a heating temperature between the phase transition temperature and the glass transition point.

Appl. No. 10/526,126
Reply to Office Action of November 15, 2006

Claim 2 (Canceled).

Claim 3 (Currently Amended): The organic thin-film transistor of claim [[2]] 1, wherein the heating temperature is in the range of from 100 to 250 °C.

Claim 4 (Original): The organic thin-film transistor of claim 1, further comprising an orientation layer provided in contact with the organic semiconductor layer.

Claim 5 (Original): The organic thin-film transistor of claim 1, wherein the phase transition temperature is in the range of from 100 to 240 °C.

Claim 6 (Original): The organic thin-film transistor of claim 1, wherein the glass transition temperature is in the range of from 110 to 250 °C.

Claim 7 (Original): The organic thin-film transistor of claim 1, wherein the organic thin-film transistor is manufactured by a process comprising the step of coating a solution or

Appl. No. 10/526,126
Reply to Office Action of November 15, 2006

dispersion solution of at least one of the organic semiconducting materials on the support to form the organic semiconductor layer.

Claim 8 (Original): The organic thin-film transistor of claim 1, wherein one of the organic semiconducting materials is a n-conjugated polymer or oligomer.

Claim 9 (Original): The organic thin-film transistor of claim 8, wherein the n-conjugated polymer is a homopolymer or copolymer of thiophene and the n-conjugated oligomer is a homo-oligomer or co-oligomer of thiophene.

Claim 10 (Original): The organic thin-film transistor of claim 9, wherein the homopolymer or copolymer of thiophene is a homopolymer or copolymer containing a unit with two or more 3-alkylthiophene rings regioregularly connected in series, and the homo-oligomer or co-oligomer of thiophene is a homo-oligomer or co-oligomer containing a unit with two or more 3-alkylthiophene rings regioregularly connected in series.

Claim 11 (Original): The organic thin-film transistor of

Appl. No. 10/526,126
Reply to Office Action of November 15, 2006

claim 10, wherein the alkyl group of the 3-alkylthiophene rings is an alkyl group having a carbon atom number of from 4 to 15.

Claim 12 (Withdrawn): A manufacturing process of an organic thin-film transistor comprising a support and provided thereon, a gate electrode, an insulation layer, a source electrode, a drain electrode, and an organic semiconductor layer, the support comprising at least one of resins, and the organic semiconductor layer containing at least one of organic semiconducting materials, wherein a phase transition temperature of one of the organic semiconducting materials is not more than a glass transition point of one of the resins, the process comprising the steps of:

providing a solution or dispersion solution of the organic semiconducting material; and

coating the solution or dispersion solution on the support or on the insulation layer to form the organic semiconductor layer.

Claim 13 (Withdrawn): The manufacturing process of claim 12, comprising the step of heat treating the organic semiconductor

Appl. No. 10/526,126
Reply to Office Action of November 15, 2006

layer at a heating temperature between the phase transition temperature and the glass transition point.

Claim 14 (Withdrawn): The manufacturing process of claim 13, wherein the heating temperature is in the range of from 100 to 250 °C.

Claim 15 (Withdrawn): The manufacturing process of claim 13, wherein the phase transition temperature is in the range of from 100 to 240 °C.

Claim 16 (Withdrawn): The manufacturing process of claim 13, wherein the glass transition temperature is in the range of from 110 to 250 °C.

Claim 17 (Withdrawn): The manufacturing process of claim 12, wherein one of the organic semiconducting materials is a π -conjugated polymer or oligomer.

Claim 18 (Withdrawn): The manufacturing process of claim 17, wherein the π -conjugated polymer is a homopolymer or copolymer of

Appl. No. 10/526,126
Reply to Office Action of November 15, 2006

thiophene and the π -conjugated oligomer is a homo-oligomer or co-oligomer of thiophene.

Claim 19 (Withdrawn): The manufacturing process of claim 18, wherein the homopolymer or copolymer of thiophene is a homopolymer or copolymer containing a unit with two or more 3-alkylthiophene rings regioregularly connected in series, and the homooligomer or co-oligomer of thiophene is a homo-oligomer or co-oligomer containing a unit with two or more 3-alkylthiophene rings regioregularly connected in series.

Claim 20 (Withdrawn): The manufacturing process of claim 19, wherein the alkyl group of the 3-alkylthiophene rings is an alkyl group having a carbon atom number of from 4 to 15.